



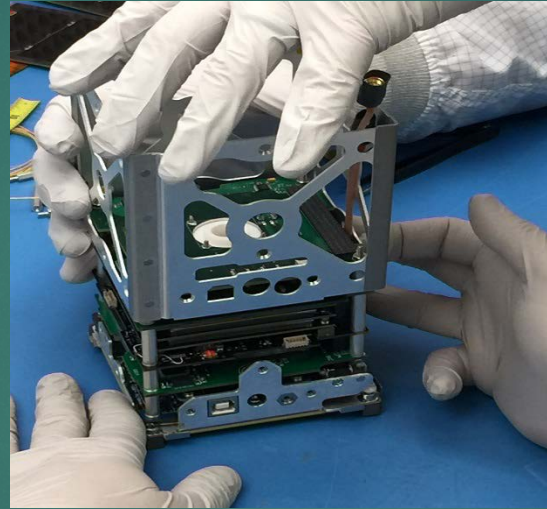
Office of Small Business Programs Webinar: Engagement with Tribal Colleges and Universities

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MAIANSE

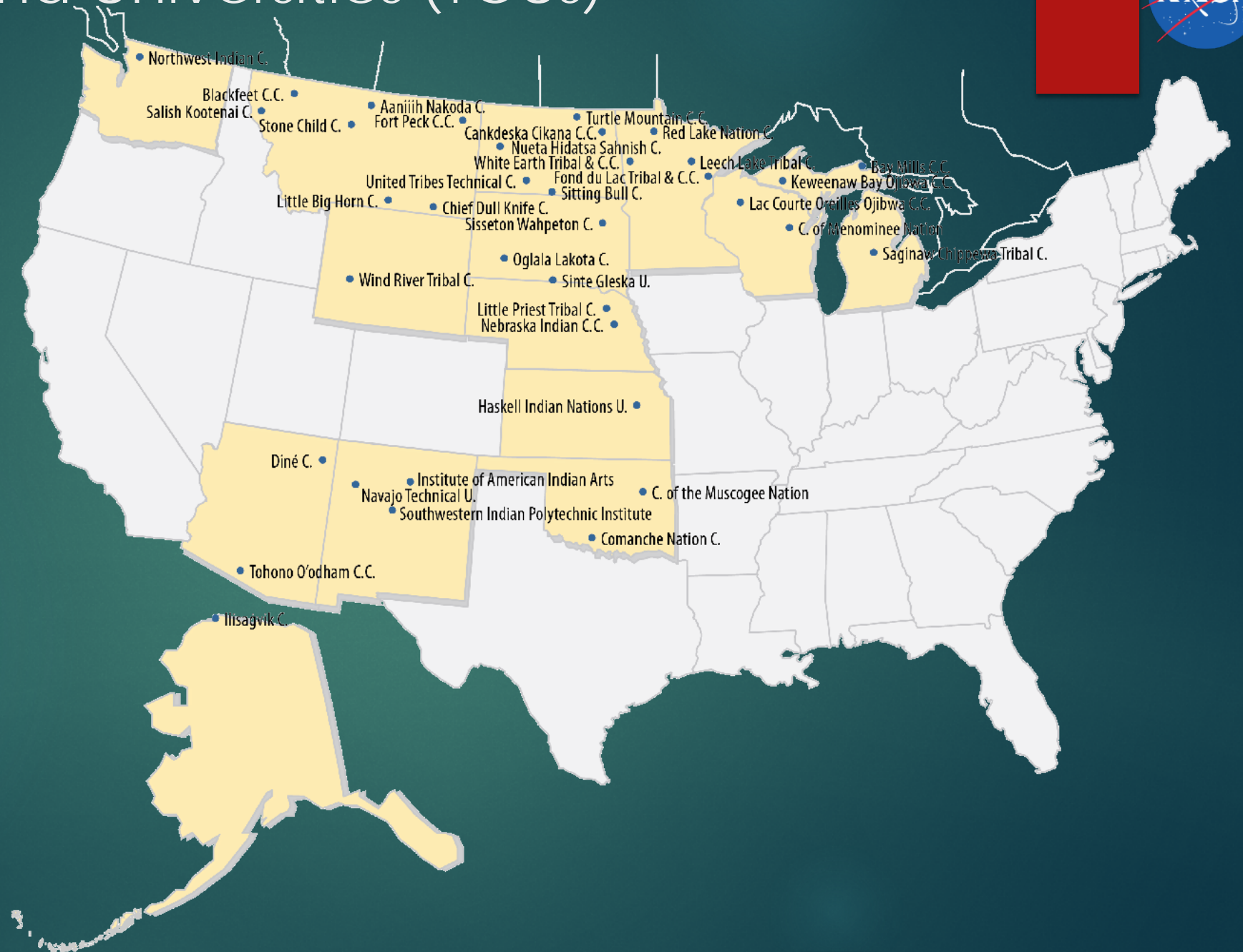


To enhance the academic, research, and technological capabilities of Tribal Colleges and Universities (TCUs) and American Indian and Alaska Native Serving Institutions (AIANSIs) by engaging students, faculty and institutions through authentic learning experiences related to NASA missions

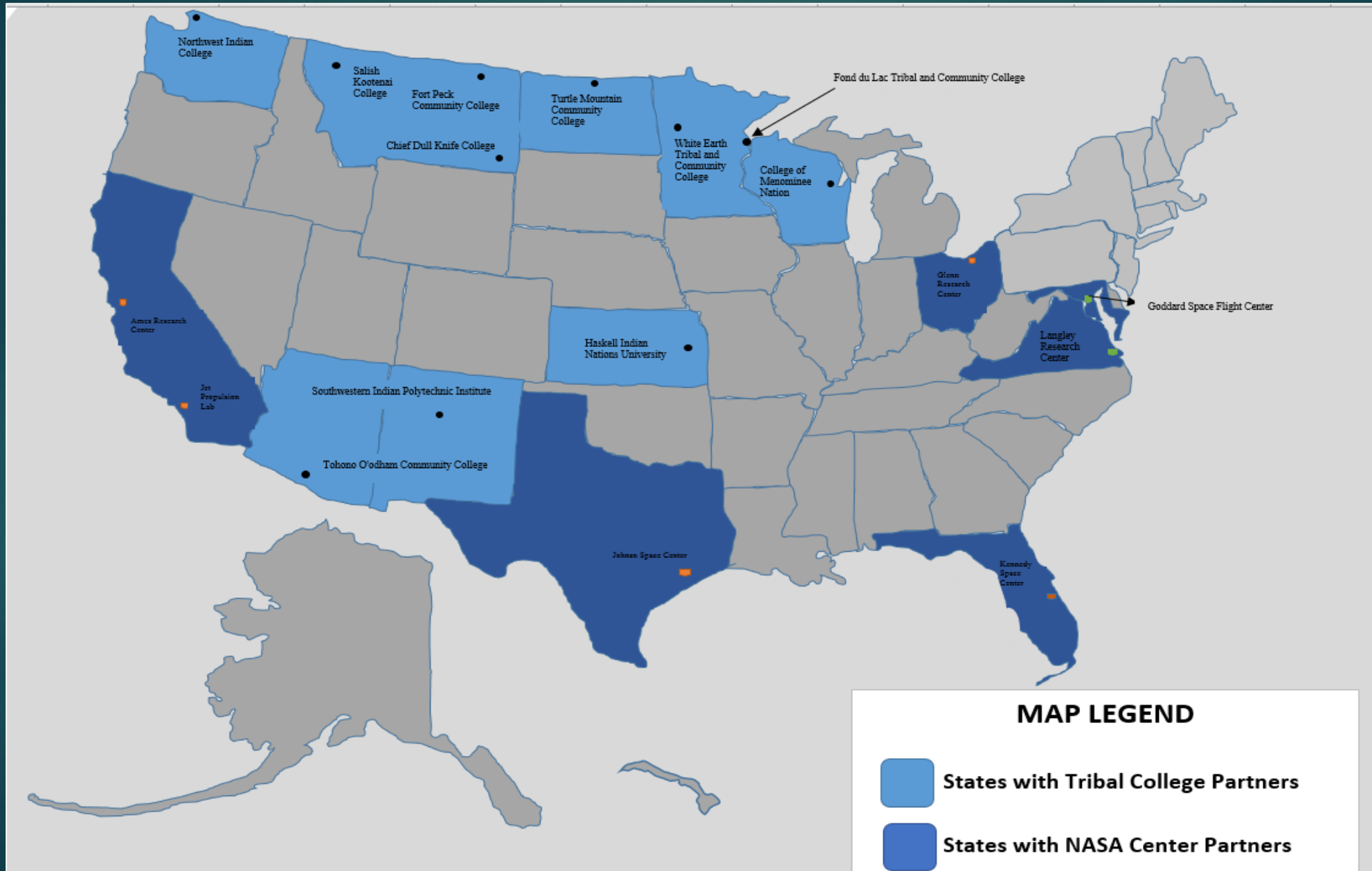
Tribal Colleges and Universities (TCUs)



- 38 TCUs in the United States.
- TCUs are chartered by their respective tribal governments.
- TCU curriculum includes discipline areas such as environmental science, engineering, and advanced manufacturing.



MAIANSE and TCU Collaborations



Awardee Projects



Chief Dull Knife College

The implementation of the *Student Transformational Experience* and its "STEP-wise" strategy provides students with an incremental introduction to research environments at CDKC and at partnering higher education institutions and research organizations such as NASA.



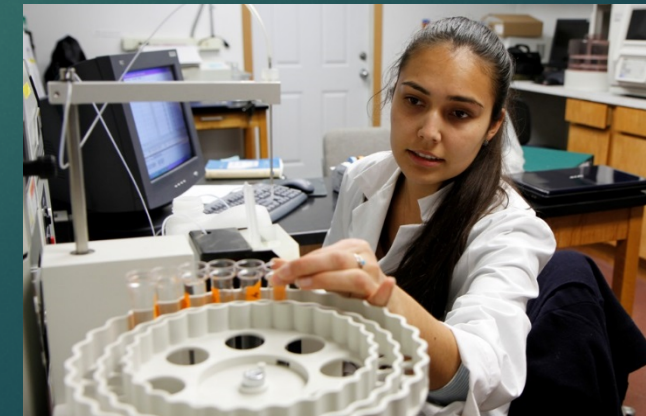
Southwestern Indian Polytechnic Institute

The *Information Technology Experiences for Students and Teachers Using Simulated Tele-Science Exploration of Mars - Expansion and Proliferation of Capacity* project designs and implements a Virtual Reality (VR) experience and curriculum for students from Tribal Colleges and their partnered high schools to become familiar with the programming and working with robotic rovers in a replica Mars Yard.



Northwest Indian College

The *Earth System Education for Climate Resiliency in the Salish Sea* project incorporates remote sensing and geospatial tools into interdisciplinary programs and course curricula to increase students' understanding of climate resiliency.



Awardee Projects Continued



Turtle Mountain Community College

The *Weathering Change* project engages TMCC faculty, pre-service teachers and STEM students in addition to local high school and elementary educators in summer workshops incorporating remote sensing principles, NASA missions and NASA datasets.

Fond du Lac Tribal and Community College

The FDLTCC project encourages Native American students from middle school to college to enter STEM fields by demonstrating in weekend camps how scientific research from NASA supports culturally-relevant place-based climate change investigations, and identifies community-level opportunities to address/respond to the changes.

Salish Kootenai College

The *Living Landscapes* project focuses on development of a college-level climate change course specifically centered on remote sensing, a similar high school learning unit and companion social software tools



Communication Strategy



- Website
 - Virtual “face” of MAIANSE
- Social Media
 - Facebook group
 - Pushing content out to various NASA social media channels
- Multimedia
 - Audio Stories
 - Written Articles
 - Photo gallery
 - Handouts



- Email Campaigns
 - Use of listservs to inform MAIANSE community of important events/opportunities
 - Customized, visually appealing emails to increase participation/engagement
- Virtual Engagement
 - Webinars with community to discuss opportunities
 - “Ask Us” series
- Personal Visits
 - To Tribal-serving institutions



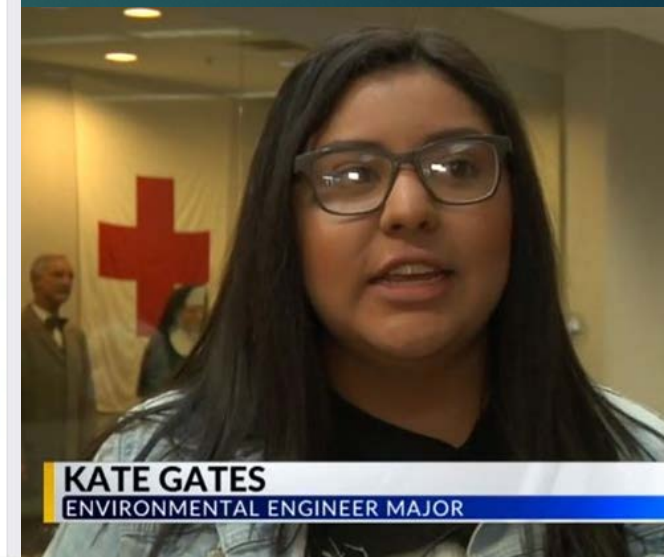
SUCCESSFUL COMMUNICATION STRATEGY: AWARENESS AT THE 2018 AIHEC CONFERENCE

■ Social Media

- NASA Internships Social
 - 8,764 impressions
 - 597 engagements
- NASA Education Social
 - 31,300 impressions
 - 1,129 engagements
- Hashtag campaign
 - #NCAS2018
 - #MUREP

■ Media Coverage

- Coordinated NASA Press Release
- Local ND Channels
 - KYFR News
 - KX News
- American Indian College Fund



Communication: Websites

Home

■ About

Org Chart

■ Projects

■ Education

MAIANSE

TCU Map

Media

Awardees

Advocacy Groups

Resources

Contact Us

Useful Education Links

Education Event Archives

Publications

■ Personnel

■ Science Highlights

Tools

NASA MAIANSE Activity

Minority University Research Education Project for
American Indian and Alaskan Native STEM Engagement (MAIANSE)



About MAIANSE

NASA MAIANSE activity utilizes **NASA's** unique contributions in collaboration with Tribal Colleges and Universities (TCUs) and other tribal-serving institutions to improve the overall quality of the Nation's STEM education.

The mission of the **NASA MAIANSE** activity focuses on five objectives:

- ▶ Increase AIAN students' involvement and interest in STEM fields:
 - ▶ educate AIAN students on the value of STEM fields in their lives and in their communities, and
 - ▶ positively influence the perception of AIAN students' ability to participate in STEM fields.
- ▶ Strengthen efforts to attract and retain increased numbers of AIAN students in **NASA** STEM programs to encourage their pursuit of educational disciplines and careers critical to **NASA's** and the Nation's future engineering, scientific, and technical workforce.



Topics

Missions

Galleries

NASA TV

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About ESTEEM



TrACE Collaborative



Resources

ESTEEM awards are aligned to the NASA Science Mission Directorate. The awardee institution's work will tie directly into and apply NASA Science research.

This collection of Earth Science and education resources is available to students and educators at every level.

Please utilize this content to learn, teach or create content around NASA's science.

Student Engagement: Cooperative Agreements



The MAIANSE-funded Mars Yard at the Southwestern Indian Polytechnic Institute



Fond du Lac Tribal and Community College Students at a MAIANSE-funded STEM camp



MAIANSE-funded Chief Dull Knife College students work at the research lab at Montana State University



"Weathering Change" Chemistry lab course at Turtle Mountain Community College

Cooperative agreements provide opportunities for TCU students, faculty and staff to engage in NASA-related STEM activities. The winning proposals offer innovative methods, approaches, and concepts to make appropriate use of current NASA-unique engineering and scientific resources.

Student Engagement: Competitions



Southwestern Indian Polytechnic Institute accepting the prize for first place at 2017 Swarmathon competition at Kennedy Space Center



Chief Dull Knife College prepares for the First Nations Rocket Launch competition



Chief Dull Knife College participating in the Wallops Flight Facility RockOn Rocketry Competition



NASA Community College Aerospace Scholars (NCAS) team of Tribal Colleges competing at the NCAS Competition at the AIHEC Student Conference

Outside of cooperative agreements the MAIANSE team strives to engage Tribal College and University students in other authentic STEM experiences aligned to NASA missions.

Student Engagement: Internships



A Chief Dull Knife Student conducting life science research during an internship at Ames Research Center



A Haskell Indian Nations University student participates in a MAIANSE funded externship focused on understanding climate change impacts in Indian Country



Southwestern Indian Polytechnic Institute student in a clean room on an internship at Johnson Space Center

Tribal College and University students participate in the most authentic STEM experiences aligned with NASA missions.

Program Evaluation and Site Visits



Northwest Indian College (NWIC) site visit with MAIANSE awardee Principal Investigator Misty Peacock and NWIC STEM faculty



Northwest Indian College (NWIC) site visit



Alternative Energy Project on display at Chief Dull Knife College



Caroline Montgomery conducts a site visit at Turtle Mountain Community College with awardee PI Stacie Blue

Team members have visited 21 of the 38 Tribal College and Universities to evaluate continuing partnerships and to establish new relationships with the STEM faculty and college administration at TCUs

Sample Technical Capabilities: Navajo Technical University



Academics

- Engineering degree programs in Industrial and Mechanical Engineering
- Courses in 3-D Printing, Laser Scanning, and White Light Scanning
- Associates Degree in Applied Science in Engineering Technology
- Development of a Chemical Engineering curriculum

Center for Digital Technologies

- Disciplines: Advanced Manufacturing, Metrology, Materials Science, Geometric Dimensioning, and Tolerancing
- Equipment: Laser Tracker, Portable Coordinate Measurement Machines, Computed Tomography, and several 3-D Printers

Interns

- NASA: Industrial Engineering, Digital Manufacturing, Additive Manufacturing, and Laser Scanning

Commercial Work

- Design iterations for sensor enclosures
- Model construction and laser scanning
- Drone and Rover Technology

National Science Foundation and US Department of Energy Partnerships

- Developing advanced manufacturing curriculum at other TCUs



Partnership & Collaboration: Advocacy



NASA AISES team members provide a virtual tour of the International Space Station to Alameda Junior/High School students in Denver, CO



MUREP Manager Joeletta Patrick and former astronaut John Herrington speak with an AISES student at the NASA career booth



NASA AISES team member with two SACNAS participants

The 2017 American Indian Science & Engineering Society (AISES) Conference was held in Denver, CO and the 2017 Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Conference was held in Salt Lake City, Utah.



Tribal College students participate in the NCAS Mars Rover Competition at the AIHEC Student Conference



MAIANSE team members discuss NASA opportunities with AIHEC students at the NASA exhibit booth

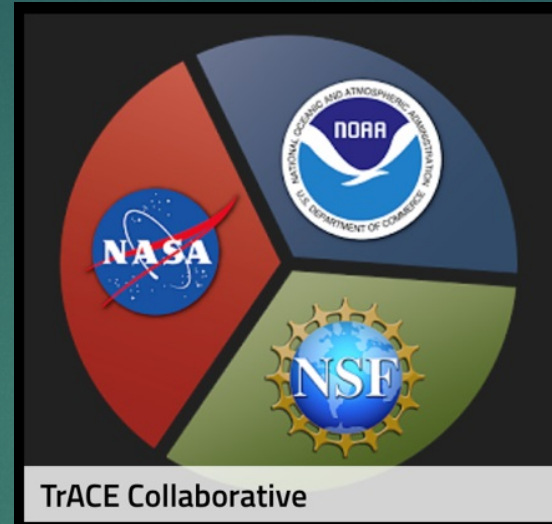
The 2018 American Indian Higher Education Consortium (AIHEC) Student Conference was held in Bismarck, North Dakota.

Partnerships & Collaborations: Research



Credit: Rob Margetta, NSF

NSF TCUP Research Symposium



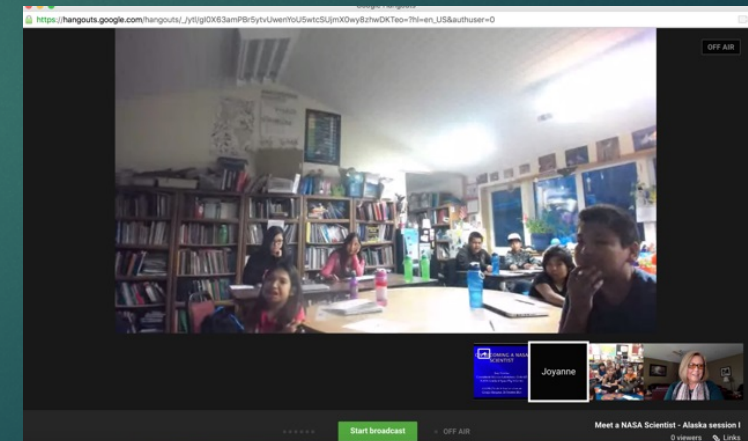
10 years of Interagency Collaboration



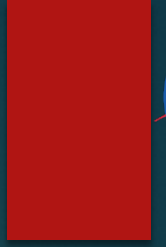
Indigenous Phenology Network



Rising Voices: COLLABORATIVE SCIENCE WITH INDIGENOUS KNOWLEDGE FOR CLIMATE SOLUTIONS



Arctic & Earth SIGNS: Connecting scientists with classrooms in NASA Science Mission Directorate Science Activation team



Partnerships and Collaborations: Ongoing

- ▶ Bureau of Indian Affairs (BIA)
- ▶ United States Dept. of Agriculture (USDA)
- ▶ Climate Literacy and Energy Awareness Network (CLEAN)
- ▶ National Oceanic and Atmospheric Administration (NOAA)
- ▶ Environmental Systems Research Institute (ESRI)
- ▶ Space Grant Consortia in several states
- ▶ Geoscience Alliance
- ▶ NASA Applied Sciences Program
- ▶ NASA Science Mission Directorate
- ▶ NASA Applied Engineering Technology Directorate (AETD)
- ▶ National Adaptation Forum
- ▶ Federal Emergency Management Agency (FEMA)
- ▶ Global Learning and Observations to Benefit the Environment (GLOBE)

Contact



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